Total No. of Pages : $\boxed{2}$

Register Number :

5538

Name of the Candidate :

B.Sc. DEGREE EXAMINATION DECEMBER 2013.

(CONSTRUCTION MANAGEMENT)

(FIFTH SEMESTER)

520 — DESIGN CONCEPT OF STRUCTURES

Time : Three hours

Maximum : 75 marks

Answer ONE question from each Unit. **(5 × 15 = 75)**

UNIT I

1. (a) Explain design criteria of plate girders.
    (b) Write short notes on: (i) bunkers (ii) silos.

                              Or

2. (a) A plate girder used as a gantry consists of:
         Design the Plate girder with the above given measurements.
         Top Flange plate = $400 \times 25\ mm$

         Bottom Flange plate = $300 \times 25\ mm$

         Web plate = $1000 \times 12\ mm$. The data regarding the building and crane is

         Bay width = B = 16m
         Column spacing = C = 10m
         Crane capacity = $w_k = 100\ KN$

         Crane girder weight = $w_c = 80\ kN$

         Crab weight = $w_r = 16\ KN$

         Wheel spacing = a = 3.0m
         Minimum edge distance = g = 1.0m
    (b) Explain the design procedure of chimney.

UNIT II

3. (a) Explain the components of a bridge.
    (b) Write the design procedure of T – beam bridges.

                              Or

4. (a) Explain the R.C.C. slab bridges and sketch of neatly.
    (b) Explain the types of bridges and explain them briefly.

UNIT III

5. (a) What are the steps undertaken by the multistoried building systems.

    (b) Explain the design procedure of earthquake.

Or

6. (a) What are the steps involved in earthquake resistance building?

    (b) Explain ductility.

UNIT IV

7. (a) Design a RC circular water tank

    Capacity of circular tank   = 5,00,000 liters

    Depth of water   = 4m

    Free board   = 200mm

    Adopt M_2O grade of concrete and Fe 415 steel. Permissible stresses $m = 13$, σ_{ct} 1.2 N/mm^2 $\sigma_{cc} = 5N/mm^2$ $\sigma_{st} = 115$ N/mm^2.

    (b) Write the general features of the design of water tanks.

Or

8. (a) What are the steps involved in design of steel water tanks?

    (b) A reinforced concrete water tank resting on ground is $6m \times 2m$ with a maximum depth of $2.5m$ using M-20 concrete and Grade – I steel. Design the tank walls.

UNIT V

9. (a) Design a cantilever retaining wall

    Height of wall above ground level =4m

    Density of earth =$18KN/m^3$

    Angle of internal friction =30

    SBC of soil = 200 KN/m^2.

    Adopt M_2O grade of concrete and Fe415 steel.

    (b) Define of steel truss bridges.

Or

10. (a) Write the design steps of counter fort retaining walls.

    (b) Briefly explain design of steel truss bridges for railway loading.

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